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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

NATALINI, JEFF WILLIAM

ART UNIT PAPER NUMBER

2858

DATE MAILED: 11/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,621

Applicant(s)

BRABERS, PETERALV

Examiner

Jeff Natalini

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 14, 15, 17, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Claim Objections

1. Claims 15 and 22 are objected to because of the following informalities:

In regard to claim 15, in order to make the record clear, in the amended portion of the claim: "the first current electrode is positioned more remote from the electrodes" should be changed (at the end of the phrase) to "the voltage electrodes", to make the antecedent basis clear.

In regard to claim 22, "Device according to claims 21" should be changed to "claim 21", even though claim 21 is a multiple dependent claim it should still be referred to singularly. Also on line 5 after "neighboring voltage electrodes" an open parenthesis "(" needs to be inserted.

Appropriate correction is required.

2. Claim 21 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n).

Claim 22 is objected to because it depends from an improper multiple dependent claim.

Claim 21 will be examined as though it reads "claims 2, 5, or 6".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 15, 17, and 21-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Thompson (2531088)

In regard to claim 1, Thompson discloses a device for measuring the resistivity soundings on water covered subsurfaces (col 1 line 52-col 2 line 12; col 3 line 55-66; col 7 line 68-71) comprising: a multi-channel towing cable (fig 1 (11) –all references throughout the action are to figure 1 unless otherwise specified), which tows along a water covered subsurface (21), with an array of electrodes including a first current electrode (12), a second current electrode (13) and a number of voltage electrodes (14-18), whereby the voltage electrodes are positioned between the first and second current electrodes (current electrodes 12 and 13, sandwich voltage electrodes 14-18; col 4 line 30-40).

In regard to claim 2, Thompson discloses wherein at least 3 voltage electrodes (14-18) are positioned between the first (12) and second current electrodes (13), whereby the voltage electrodes are separated from each other by distances along the cable that decrease from the first current electrode towards the second current electrode (seen in figure 2, described in col 7 line 4-12).

In regard to claim 3, Thompson discloses whereby the first current electrode (12) is located near a first end of the cable that is connected to the vessel (19).

In regard to claim 4, Thompson discloses whereby the second current electrode (13) is located near a second end of the cable that is connected to the vessel (19).

In regard to claim 5, Thompson discloses whereby a first voltage electrode (14) is separated from the first current electrode (12) by a distance (2000 feet; col 7 line 5-8) that is at least equal to the distance between a second voltage electrode (15) and the second current electrode (13; distance 6000-4000 = 2000 feet so they are equal; col 7 line 5-15), whereby the second voltage electrode (18) is located between the first voltage electrode (14) and the second current electrode (13), and whereby further voltage electrodes (16-18) are located between the second voltage electrode (15) and the second current electrode (13).

In regard to claim 6, Thompson discloses wherein the voltage electrodes are connected to each other such that a voltage gradient can be measured between pairs of voltage electrodes (col 7 line 29-37, fig 3), wherein the distance between the voltage electrodes decreases along the cable from the first current electrode (12) towards the second current electrode (13; col 7 line 5-15).

In regard to claim 15, Thompson discloses a method for measuring the resistivity soundings on water covered subsurfaces (col 1 line 52-col 2 line 12; col 3 line 55-66; col 7 line 68-71) including the steps of: towing a multi-channel towing cable (fig 1 (11), substantially parallel to the water covered subsurface (21), where the cable has an array of electrodes including a first current electrode (12), a second current electrode (13) and a number of voltage electrodes (14-18), whereby the voltage electrodes are positioned between the first and second current electrodes (current electrodes 12 and 13, sandwich voltage electrodes 14-18; col 4 line 30-40), whereby the first current

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electrode (12) is positioned more remote from the voltage electrodes (14-18) than the second current electrode (13, shown in fig 2; col 7 line 5-15);

generating an electric field between the current electrodes by injecting an electrical current (col 5 line 55-65, it is known this current to these electrodes will produce an electric field, discussed in col 5 line 20-47);

measuring a voltage gradient associated with the generated electric field between at least two pairs of voltage electrodes (col 7 line 28-37) whereby the distance between a first pair of voltage electrodes (14 and 15 is 2000 feet; col 7 line 7-9) is larger than or equal to the distance between a second pair of voltage electrodes located closer to the current electrode (15 and 16 is 1000 feet, col 7 line 7-9).

In regard to claim 17, Thompson discloses wherein a first current electrode (12) and a number of voltage electrodes forming electrode pairs (14-18), are positioned on one line between the first and second electrodes (12 and 13), whereby one of the current electrodes (12) is positioned more remote from the voltage electrodes (14-18) than the other current electrode (13) and the distance along the cable between the voltage electrodes of the voltage electrode pairs increases from the nearest current electrode toward the more remoter current electrode (col 7 line 5-15).

In regard to claims 21 and 22, Thompson et al. discloses wherein the voltage electrodes (14-18) are connected such that a gradient can be measured across pairs of neighboring voltage electrodes (col 7 line 28-37) having one electrode in common (electrode 14 is the common electrode in the measurements in fig. 3).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 7-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (2531088) in view of Ridd et al. (5032794).

In regard to claim 7, Thompson discloses a method for measuring the apparent resistivity of water covered subsurfaces (col 1 line 52-col 2 line 12; col 3 line 55-66; col 7 line 68-71) including the steps of:

towing a multi-channel towing cable (fig 1 (11)) along a water covered subsurface (21), said cable has an array of electrodes including a first current electrode (12), a second current electrode (13) and a number of voltage electrodes (14-18), whereby the voltage electrodes are positioned between the first and second current electrodes (current electrodes 12 and 13, sandwich voltage electrodes 14-18; col 4 line 30-40).

generating an electric field between the current electrodes by injecting an electrical current (col 5 line 55-65, it is known this current to these electrodes will produce an electric field, discussed in col 5 line 20-47);

measuring of a voltage gradient associated with the generated field between a first and second voltage electrode of the array of electrodes (14 and 15; col 7 line 35-

37), whereby the second voltage electrode (15) is located between the first voltage electrode (14) and the second current electrode (13).

measuring of a voltage gradient associated with the generated electric field between further pairs of voltage electrodes (col 7 line 29-37), whereby further voltage electrodes (16-18) are located between the second voltage electrode (15) and the second current electrode (13).

where the rise in potential based on the graphs of gradients is proportional to the electrical resistivity of the subsurface level (col 7 line 53-71).

Thompson lacks specifically wherein the resistivity is calculated as a function of depth beneath the water covered subsurface.

Ridd et al. in an apparatus for monitoring changes in underwater sediment discloses wherein resistivity is calculated as a function of depth beneath the water covered subsurface (col 1 line 12-14; col 3 line 8-14).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Thompson to calculate the resistivity as a function of depth beneath the water covered subsurface as taught by Ridd et al. in order to measure changes in the level of underwater sediment (col 1 line 6-8).

In regard to claim 8, Thompson discloses whereby a first voltage electrode (14) is separated from the first current electrode (12) by a distance (2000 feet; col 7 line 5-8) that is at least equal to the distance between a second voltage electrode (15) and the second current electrode (13; distance 6000-4000 = 2000 feet so they are equal; col 7 line 5-15), whereby the second voltage electrode (18) is located between the first

voltage electrode (14) and the second current electrode (13) , and whereby further voltage electrodes (16-18) are located between the second voltage electrode (15) and the second current electrode (13).

In regard to claim 9, Thompson discloses wherein the voltage electrodes are connected to each other such that a voltage gradient can be measured between pairs of voltage electrodes (col 7 line 29-37, fig 3), wherein the distance between the voltage electrodes decreases along the cable from the first current electrode (12) towards the second current electrode (13; col 7 line 5-15).

In regard to claim 10, Thompson discloses wherein a voltage gradient is measured between pairs of neighboring voltage electrodes (col 7 line 28-37; fig 3).

In regard to claim 14, Thompson discloses wherein the cable is towed by a vessel (19) substantially parallel to the water covered subsurface (21), such that the first current electrode (12) is located nearby the vessel and the second current electrode (13) is located remote from the vessel.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson (2531088) in view of Ridd et al. (5032794) as applied to claim 9 above, and further in view of Bischoff et al. (4298840).

In regard to claim 11, Thompson lacks specifically wherein a voltage gradient is measured between at least two pairs of voltage electrodes coupled through a common electrode.

Bischoff et al. discloses wherein a voltage gradient is measured between pairs of neighboring voltage electrodes, and wherein the gradient is measured of pairs with a common voltage electrode (col 3 line 5-15).

It would have been obvious to one with ordinary skill in the art at the time the invention was made for Thompson as modified by Ridd et al. to measure the gradient of a pair of neighboring voltage electrode and that share a common voltage electrode as taught by Bischoff et al. in order for determining the potential difference between each pair of electrodes (col 3 line 12-15).

Allowable Subject Matter

8. Claims 12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In regard to claim 12, the prior art does not disclose or render obvious whereby noisy apparent resistivity curves, resulting from voltage measurements between the common voltage electrode and two neighboring voltage electrodes due to noise on the common voltage electrode are corrected in accordance with adjacent resistivities in order to obtain a smooth resistivity curve in the combination as claimed.

In regard to claim 13, see office action mailed 6/1/05.

Response to Arguments

Applicant's arguments with respect to claims 1-15, 17, and 21-22 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Natalini whose telephone number is 571-272-2266. The examiner can normally be reached on M-F 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jeff Natalini



ANJAN DEB
PRIMARY EXAMINER